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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/423,633	11/17/1999	KATSUHIKO HIRAMATSU	P18671	6986

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EXAMINER

TORRES, MARCOS L

ART UNIT	PAPER NUMBER
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2683

DATE MAILED: 01/23/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/423,633

Applicant(s)

HIRAMATSU, KATSUHIKO

Examiner

Marcos L Torres

Art Unit

2683

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8, 12-19 is/are rejected.
- 7) ☒ Claim(s) 9-11 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

### Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 2, 3, 6, 17 and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Forssen.

As to claim 1, Forssen discloses a base station apparatus comprising: downlink transmitter to transmit a first signal to a specific mobile station apparatus and transmitting a second signal to another mobile station apparatus with directivity different from that of said first signal; determiner to determine whether the directivity of said first signal should be changed or not (column 3, line 65 to column 4, line 14); and directivity controller to change the directivity of said first signal based on this determination result of the determiner (column 5, lines 13-14).

As to claim 2 and 17, Forssen disclose a base station apparatus wherein the determiner measures a transmission power ratio which is the ratio of the transmission power of the first signal to the transmission power of the second signal, measures a reception power ratio which is the ratio of the reception power of the first signal to the reception power of the second signal, and if the difference between said transmission power ratio and said reception power ratio is greater than a predetermined first

Art Unit: 2683

threshold, determines that the directivity of said first signal should be changed (column 4, line 60 to column 5, line 15).

As to claim 3 and 18, Forssen discloses a base station apparatus wherein, if the difference between said reception power ratio and said transmission power ratio is greater than the predetermined first threshold and at the same time the mobile station apparatus to which the first signal was sent requests the transmission power to be increased, the determiner determines that the directivity of said first signal should be changed (see column 4, lines 36-59).

As to claim 5, Forssen discloses a base station apparatus comprising transmission power controller to control the transmission power of a transmission signal, said transmission power controller does not change the transmission power if the determiner determines that the directivity should be changed (see column 4, line 60 to column 7 line 26).

As to claim 6, Forssen discloses a base station apparatus wherein, if the determiner determines that the directivity should be changed, the directivity controller changes the directivity orientation without changing the width of directivity (column 4, lines 51-54).

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. Claims 4, 12-16 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Forssen in view of Suzuki.

As to claims 4 and 19, Forssen discloses the base station apparatus changes the directivity of said first signal. Suzuki discloses a radio communication method wherein, if the difference between the reception power ratio and transmission power ratio is greater than a predetermined first threshold and at the same time the reception power of a signal transmitted from the mobile station apparatus that received the first signal is smaller than a predetermined second threshold (see column 5, lines 50-54). Therefore, it would have been obvious to one of the ordinary skill in the art at the time of the invention to improve the Forssen system with Suzuki teaching for an improved change of directivity.

As to claim 12, 13 and 14, Forssen discloses everything claimed as explained above except for a mobile station apparatus comprising: first measuring means for measuring the reception power of a first signal transmitted from the base station apparatus to said mobile station; second measuring means for measuring the reception power of a second signal transmitted from the base station apparatus to other than said

Art Unit: 2683

mobile station; and uplink transmitter for transmitting the measurement results of said first and second measuring means to the base station apparatus. Suzuki discloses a mobile station apparatus comprising: first measuring means for measuring the reception power of a first signal transmitted from the base station apparatus to said mobile station; second measuring means for measuring the reception power of a second signal transmitted from the base station apparatus to other than said mobile station; and uplink transmitter for transmitting the measurement results of said first and second measuring means to the base station apparatus (see column 6, lines 5-43). Therefore, it would have been obvious to one of the ordinary skill in the art at the time of the invention to add the Suzuki features to the Forssen system for a better reception signal.

As to claim 15, Forssen discloses a radio communication method, wherein a base station apparatus transmits a first signal to a specific mobile station apparatus, at the same time transmits a second signal to another apparatus other than said mobile station apparatus different from that of said first signal (column 3, line 65 to column 4, line 14) and discloses whether the directivity of said first signal should be changed or not based on transmission power ratio and reception power ratio and changes the directivity of said first signal based on the determination result (column 5, lines 46-53). Suzuki disclose a mobile station apparatus measures the reception power of said first signal and said second signal and transmits the measurement results to the base station apparatus, said base station apparatus measures a transmission power ratio which is a ratio of the transmission power of said first signal to the transmission power of said second signal, measures a reception power ratio which is a ratio of the reception

Art Unit: 2683

power of said first signal to the reception power of said second signal (column 3, lines 37-45). Therefore, it would have been obvious to one of the ordinary skill in the art at the time of the invention to add the Suzuki features to the Forssen system for the simple purpose of less interference and better reception.

As to claim 16, Forssen discloses everything claimed as explained above except for a radio communication method wherein the mobile station apparatus that received the first signal calculates a reception power ratio and transmits it to the base station apparatus. Suzuki discloses a radio communication method wherein the mobile station apparatus that received the first signal calculates a reception power ratio and transmits it to the base station apparatus (see column 6, line 61 to column 7, line 9). Therefore, it would have been obvious to one of the ordinary skill in the art at the time of the invention to combine Suzuki teachings with Forssen system for a redundant system having an enhanced reception.

4. Claims 7-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Forssen in view of Ward.

As to claim 7-8, Forssen discloses everything claimed as explained above except for the base station apparatus wherein, if the determiner determines that the directivity should be changed, the directivity controller broadens the width of directivity by a certain amount with respect to the width of the previous directivity, adjusts the transmission power, changes the directivity orientation and returns the width of directivity to the original value. Ward discloses a base station apparatus wherein, if the determiner determines that the directivity should be changed, the directivity controller broadens the

Art Unit: 2683

width of directivity by a certain amount with respect to the width of the previous directivity, adjusts the transmission power, changes the directivity orientation and returns the width of directivity to the original value (see column 8, line 31 to column 9, line 36). Therefore, it would have been obvious to one of the ordinary skill in the art at the time of the invention to combine Ward teachings to the Forssen system for a better tracking and reception.

***Allowable Subject Matter***

5. Claims 9-11 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

6. The following is a statement of reasons for the indication of allowable subject matter: The base station apparatus wherein the determiner sets a third threshold greater than the first threshold, and if the difference between the reception power ratio and said transmission power ratio is greater than the third threshold, determines that the directivity shift of the first signal is greater, and if the difference between the reception power ratio and said transmission power ratio is greater than the first threshold and smaller than the second threshold, determines that the directivity shift of said first signal is smaller. The base station apparatus wherein, if the determiner determines that the directivity shift of the first signal is greater, the directivity controller broadens the width of directivity drastically to adjust the directivity, and if the determiner determines that the directivity shift of said first signal is smaller, does not change the width of directivity but changes the directivity orientation. The base station apparatus wherein, if the



Art Unit: 2683

determiner determines that the directivity shift of the first signal is greater, the directivity controller broadens the width of directivity and changes the directivity orientation, adjusts the directivity and then returns the width of directivity to the original value, and if the determiner determines that the directivity shift of said first signal is smaller, does not change the width of directivity but changes the directivity orientation. Has not been found nor fairly suggested in the prior art.

### ***Conclusion***

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.
- a. Myer U.S. Patent 5,870,681 discloses a self-steering antenna array.
  - b. Forssen U.S. Patent 5,848,358 discloses an intracell handover with antenna arrays.
  - c. Fukagawa U.S. Patent 6,188,193 discloses a directivity control antenna apparatus for shaping the radiation pattern antenna of the base station in mobile communication system in accordance with estimated direction.
  - d. Koboyakawa U.S. Patent 6,317,611 discloses a communication device with adaptive antenna.
  - e. Smith U.S. Patent 6,009,124 discloses a high data rate communications network employing an adaptive sectorized antenna.
  - f. Kennedy Jr. U.S. Patent 5,771,439 discloses an adaptive antenna system and method for cellular and personal communication systems.

Art Unit: 2683

- g. Borrás U.S. Patent 5,303,240 discloses a telecommunication system using directional antennas.
- h. Keskitalo U.S. Patent 6,091,788 discloses base station equipment and a method for steering an antenna beam.
- i. Johannisson U.S. Patent 6,282,434 discloses an uplink and downlink transmission quality improvement by differentiated base station antenna pattern.
- j. Sato U.S. Patent 5,745,858 discloses a base station transmitter/receiver capable of varying composite directivity of antenna.
- k. Hakkinen U.S. Patent 5,839,056 discloses a method and apparatus for controlling transmission power of a radio transmitter.
- l. Harbin U.S. Patent 5,488,737 discloses a land based wireless communication system having a scanned directional antenna.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marcos L Torres whose telephone number is 703-305-1478. The examiner can normally be reached on 8:00am-5:30pm alt. friday.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William G Trost can be reached on 703-305-5318. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9314 for regular communications and 703-872-9314 for After Final communications.

Art Unit: 2683

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-4700.

Marcos L Torres  
Examiner  
Art Unit 2683

mlt  
January 14, 2002



**WILLIAM TROST**  
**SUPERVISORY PATENT EXAMINER**  
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